# THE WEATHER OF 1933 IN THE UNITED STATES

By R. J. MARTIN
[Weather Bureau, Washington, D.C., January, 1934]

The year 1933 was considerably warmer than normal. The average temperature, for all States, was +1.8° above normal, an excess twice that of 1932. Precipitation was below normal in nearly all sections; the average for the entire area was 2.4 inches less than that of the preceding year.

In keeping with trends for a long time past, temperatures were abnormally high over most of the country. Only the south Pacific district (California, from Fresno southward to San Diego) averaged below normal for the year, and here the deficiency was only −0.3°. The middle Pacific district (California, from San Francisco northward to Eureka) averaged exactly normal. Elsewhere temperature departures for 1933 were positive and ranged from +0.1° over the north Pacific area to +3.5° over the middle slope and +3.6° in the Missouri Valley.

Only 2 months of the year (February and April) were colder than normal for the entire United States. February, with a departure of −1.3°, was 6° colder than in 1932. The relatively coldest weather occurred in the middle plateau, where this month averaged 13° below normal. It was also in February that a new minimum temperature record for the United States was made when Riverside ranger station, in Yellowstone Park, Wyo., reported −66° on the 9th.

The three relatively warmest months were January, with a departure of +5.8°; December, +3.4°; and June, +3.3°. No single month averaged above normal in every district. Every State reported maximum temperatures of 100° or higher during the summer except Maine, New Hampshire, and Rhode Island, and in these three the maxima ranged between 95° and 99°. The highest temperature of the year was 127° at Greenland Ranch, Calif., on August 12. Using the Wyoming minimum and the California maximum the temperature range for the year was 193°.

The deficiency in precipitation averaged, for all States, over 2 inches. Only 5 of the 21 reporting districts were above normal for the whole year, and except for the North Pacific area and the Ohio Valley and Tennessee, these districts were along the Atlantic coast. The comparatively wettest area, 8.2 inches above the annual average, was the Florida peninsula; the second largest excess, 4.2 inches, occurred in the North Pacific States. Departures in the three other wetter-than-normal areas were comparatively small.

Chart 2 shows that practically all the northern, southern, western, and interior portions of the country were drier than normal. Deficiencies ranged from less than 1 inch in the South Pacific area to nearly 9 inches over the southern slope (portions of western Texas and New Mexico). In the east Gulf area the rainfall was over 7 inches subnormal, and both the lower Lake and the South Atlantic districts had large deficiencies. In at least 6 sections (east Gulf, North Dakota, Missouri Valley, the middle and southern slopes, and the middle and northern plateaus) there was less rain than in the dry year 1930.

Six of the twelve months averaged, for all States, wetter than normal, while July was exactly normal.

The wet months were March, April, May, August, September, and October; in May, the comparatively wettest month, the departure was only +0.23 inch. Two (June and November) of the five dry months averaged more than 1 inch subnormal. The largest monthly excess for any district was +7.8 inches for October in the Florida peninsula. The largest monthly deficiency was −2.7 inches in February in the middle Pacific area.

Some unusually heavy rains occurred during the year, notably in Louisiana and eastern Texas on July 22–25, and in southern California during the last week of the year. At several points in Louisiana and Texas the 4-day totals during the July rain exceeded 20 inches. Damage, mostly to crops, caused by this rain was estimated at nearly 2 million dollars. The California rain is discussed in the table of Severe Local Storms.

Snowfall was generally subnormal, but there were some instances of unusually large amounts. For example, at Crater Lake, Oreg., the total snowfall for the winter of 1932–33 was 879 inches, 250 inches of which fell in 1932. This total is only 5 inches less than the record seasonal fall for the United States of 884 inches at Tamarack, Calif., during the winter of 1896–97.

Floods, hurricanes, and other outstanding features of the weather of 1933 are discussed elsewhere in this issue of the REVIEW.

TABLE 1.—*Monthly and annual temperature departures, 1933*

| District | January | February | March | April | May | June | July | August | September | October | November | December | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New England | +9.7 | +4.7 | +0.2 | +0.4 | +2.5 | +1.8 | −0.6 | +1.0 | +2.0 | −0.4 | −3.9 | −5.2 | +1.0 |
| Middle Atlantic | +9.4 | +2.8 | +.2 | +1.3 | +3.0 | +2.5 | −.4 | +.6 | +3.7 | −.4 | −1.9 | +1.0 | +1.8 |
| South Atlantic | +7.2 | +1.5 | +1.1 | +.2 | +4.6 | +1.7 | −.8 | +.8 | +5.2 | +1.1 | −.5 | +6.2 | +2.4 |
| Florida Peninsula | +3.3 | +4.6 | +.6 | +2.3 | +3.1 | −.5 | +.5 | +.8 | +1.9 | +.9 | −1.5 | +3.4 | +1.6 |
| East Gulf | +6.7 | −.2 | +.6 | −.4 | +4.6 | +.5 | −.9 | +.7 | +4.7 | +1.6 | +1.0 | +8.9 | +2.3 |
| West Gulf | +8.2 | −1.9 | +1.5 | +.9 | +3.3 | +.7 | +.5 | .0 | +4.4 | +2.8 | +3.4 | +8.0 | +2.6 |
| Ohio Valley and Tennessee | +9.1 | +.2 | −.4 | +.1 | +2.8 | +4.0 | +.6 | −.4 | +5.0 | −1.0 | −.8 | +5.0 | +2.0 |
| Lower Lakes | +10.8 | +3.5 | +.2 | +1.9 | +2.4 | +4.6 | +2.3 | +.4 | +3.0 | −1.5 | −4.2 | −1.2 | +1.8 |
| Upper Lakes | +9.6 | +.1 | +.5 | +.1 | +1.9 | +6.2 | +2.6 | +.7 | +4.7 | −1.9 | −4.3 | −2.5 | +1.5 |
| North Dakota | +7.6 | +.6 | +6.8 | −.2 | +1.6 | +8.5 | +4.4 | +3.1 | +4.4 | −2.3 | +1.5 | −4.4 | +2.6 |
| Upper Mississippi Valley | +13.2 | −.1 | +1.2 | −.4 | +.9 | +8.2 | +2.3 | −.3 | +5.9 | −1.4 | +.1 | +2.9 | +2.7 |
| Missouri Valley | +13.3 | +.4 | +2.5 | +.6 | +.4 | +8.9 | +3.1 | −.4 | +5.7 | +.2 | +3.6 | +5.3 | +3.6 |
| Northern Slope | +6.1 | −3.7 | +4.2 | −1.8 | −1.5 | +6.9 | +4.7 | +.4 | +1.9 | +3.7 | +5.6 | +5.4 | +2.7 |
| Middle Slope | +9.6 | −1.5 | +2.7 | −.5 | +.8 | +6.9 | +3.1 | −.4 | +5.1 | +2.8 | +5.0 | +8.0 | +3.5 |
| Southern Slope | +5.7 | −2.8 | +2.6 | −.7 | +1.3 | +1.8 | +2.5 | +1.3 | +5.8 | +5.0 | +3.8 | +7.1 | +2.8 |
| Southern Plateau | −2.9 | −6.6 | +1.8 | −2.4 | −2.9 | +1.0 | +3.1 | +2.2 | +4.6 | +5.7 | +3.2 | +4.2 | +.9 |
| Middle Plateau | −2.7 | −13.0 | +.3 | −2.1 | −4.0 | +5.0 | +5.3 | +1.5 | +3.5 | +7.2 | +2.0 | +6.8 | +.8 |
| Northern Plateau | +3.3 | −8.7 | −1.0 | −1.0 | −3.3 | +2.9 | +3.4 | +1.9 | −1.3 | +5.4 | +2.0 | +9.1 | +1.1 |
| North Pacific | −.4 | −3.2 | .0 | −.3 | −2.1 | +.1 | +.2 | +1.9 | −1.6 | +1.9 | +.6 | +3.6 | +.1 |
| Middle Pacific | −3.5 | −2.4 | +.8 | +.2 | −2.7 | −.5 | +2.4 | +1.5 | −.5 | +3.4 | +2.0 | −.1 | .0 |
| South Pacific | −1.6 | −1.3 | +1.2 | −.1 | −2.9 | −2.0 | +.3 | −.5 | −3.2 | +2.5 | +3.5 | .0 | −.3 |
| United States | +5.8 | −1.3 | +1.3 | −.1 | +.7 | +3.3 | +1.8 | +.8 | +3.1 | +1.7 | +1.0 | +3.4 | +1.8 |

TABLE 2.—*Precipitation departures, monthly and annual, 1933*

| District | January | February | March | April | May | June | July | August | September | October | November | December | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New England | −1.3 | +0.4 | +1.5 | +2.4 | −0.8 | −0.6 | −1.6 | +0.7 | +2.7 | +0.8 | −1.6 | +0.3 | +2.9 |
| Middle Atlantic | −.9 | −.5 | +.4 | +1.1 | +1.1 | −.9 | −.2 | +4.4 | +.4 | −1.4 | −1.5 | −.8 | +1.2 |
| South Atlantic | −1.1 | +.6 | −1.5 | +.3 | −.2 | −2.3 | +.1 | +.1 | +1.8 | −.1 | −1.3 | −2.5 | −6.1 |
| Florida Peninsula | −2.0 | +.4 | +.2 | +1.7 | −1.8 | +2.1 | +2.2 | +1.8 | −1.2 | +7.8 | −1.6 | −1.4 | +8.2 |
| East Gulf | −1.3 | +1.6 | +.7 | +2.3 | −1.6 | −1.3 | +1.8 | −2.2 | −2.0 | −.9 | −1.9 | −2.3 | −7.1 |
| West Gulf | −.1 | +.3 | +.4 | −1.4 | .0 | −2.6 | +4.0 | +.3 | +.8 | −1.0 | −1.4 | −.5 | −1.2 |
| Ohio Valley and Tennessee | −.8 | .0 | +1.7 | +.3 | +3.3 | −2.0 | +.2 | +.7 | +.9 | −1.3 | −1.8 | +.3 | +1.5 |
| Lower Lakes | −1.3 | −.7 | +.6 | +.3 | +.5 | −2.0 | −1.6 | +.1 | −.1 | −1.2 | −.4 | −.5 | −6.3 |
| Upper Lakes | −.4 | .0 | +.1 | +.8 | +.8 | −.8 | −.4 | −1.7 | +.1 | +.6 | −.5 | −.1 | −1.5 |
| North Dakota | +.3 | −.2 | −.4 | −.3 | +.2 | −1.9 | −.5 | −1.6 | −.8 | −.5 | +.1 | +.7 | −4.9 |
| Upper Mississippi Valley | +.2 | −.7 | +1.3 | −.4 | +2.8 | −2.1 | −.4 | −1.2 | +.4 | −.5 | −1.5 | −.4 | −2.5 |
| Missouri Valley | −.2 | −.8 | +1.0 | −.6 | −.4 | −2.1 | −.7 | +.3 | +.3 | −1.3 | −.9 | +.3 | −5.1 |
| Northern Slope | −.2 | −.2 | −.2 | +1.0 | +.4 | −1.3 | −.9 | +1.2 | −.2 | −.4 | −.2 | +.1 | −.9 |
| Middle Slope | −.5 | −.4 | +.2 | +.6 | −.7 | −2.0 | −.7 | +1.6 | −.2 | −.8 | −.3 | +.3 | −2.9 |
| Southern Slope | −.4 | .0 | −.5 | −1.4 | .0 | −2.0 | −1.8 | +.3 | −1.4 | −1.2 | +.1 | −.4 | −8.7 |
| Southern Plateau | +.5 | −.5 | −.5 | +.2 | −.2 | +.6 | −.4 | −.5 | .0 | .0 | −.2 | −.5 | −1.5 |
| Middle Plateau | +.4 | −.6 | −.5 | −.6 | +.2 | −.5 | +.3 | −.1 | −.3 | .0 | −.4 | −.2 | −2.3 |
| Northern Plateau | −.3 | −.4 | −.3 | −.4 | .0 | −.5 | −.3 | −.1 | .0 | .0 | −.8 | +.7 | −2.4 |
| North Pacific | +1.3 | −1.9 | +1.7 | −1.9 | +.8 | −.2 | .0 | −.1 | +1.4 | +.4 | −3.0 | +5.7 | +4.2 |
| Middle Pacific | +.1 | −2.7 | −.3 | −1.6 | +.4 | −.2 | .0 | .0 | −.4 | .0 | −3.0 | +1.8 | −5.9 |
| South Pacific | +2.7 | −2.0 | −1.5 | −.2 | .0 | +.1 | .0 | .0 | −.2 | −.2 | −.9 | +1.7 | −.5 |
| United States | −.3 | −.4 | +.2 | +.1 | +.2 | −1.1 | .0 | +.2 | +.1 | −.1 | −1.1 | +.1 | −2.1 |

# TROPICAL STORMS OF 1933

By G. E. DUNN

[Weather Bureau, Washington, February 1934]

Twenty-one tropical disturbances were reported this year in the Caribbean Sea, the Gulf of Mexico, and the southern portion of the Atlantic. This is the largest number observed in any one season in 46 years of record. Hitherto 16, in 1887, had been the greatest number; since that time only 9 years have reported 10 or more.

The Mexican coastal area suffered the most from these storms, for no less than 5 intense hurricanes and 2 lesser tropical disturbances crossed its coastline. Immense damage was done in and about Tampico from the two hurricanes that passed almost directly over that city. Two fully developed hurricanes and two minor storms crossed the Yucatan peninsula, but no large cities were in their paths and reports of damage are meager. The middle Atlantic coast was buffeted once in August and again in September. The earlier storm crossed the coastline at Cape Hatteras and later passed directly over Washington with diminished intensity. This was one of the most destructive storms in the history of the middle Atlantic coast. As the September storm was recurving to the northeast, the center barely touched the North Carolina coast causing great damage in the New Bern section. Two hurricanes crossed the coastline near the mouth of the Rio Grande; the September storm caused enormous damage. The June hurricane which touched the north coast of Venezuela was the earliest known in that region and the only one to pass south of the island of Trinidad in 50 years of record.

Complete accounts of the majority of these storms may be found in the monthly issues of the REVIEW during the past year (1933).

*Monthly frequency of West Indian hurricanes and other tropical storms of the North Atlantic Ocean in 1933*

| | Hurricane intensity | Doubtful | Not of hurricane intensity | Total |
|---|---|---|---|---|
| May | 0 | 1 | 0 | 1 |
| June | 1 | 0 | 0 | 1 |
| July | 1 | 0 | 2 | 3 |
| August | 3 | 1 | 3 | 7 |
| September | 3 | 0 | 2 | 5 |
| October | 2 | 1 | 0 | 3 |
| November | 0 | 1 | 0 | 1 |
| Total | 10 | 4 | 7 | 21 |

*Synopsis of tropical storms of 1933. (Number of storm in table corresponds with number of track on accompanying chart)*

| Storm | Date | Place where first reported | Coast lines crossed | Maximum wind velocity reported | Lowest barometer reported | Place of dissipation | Intensity | Remarks |
|---|---|---|---|---|---|---|---|---|
| | 1933 | | | *Mi. per hr.* | *Inches* | | | |
| 1 | May 13–18 | Western Caribbean.[1] | None | Steamship *Sinaloa*, 50. | Steamship *Sinaloa*, 29.58. | Southwestern Gulf of Mexico. | Probably not of hurricane intensity. | |
| 2 | June 27, July 6 | Short distance north of Guiana.[2] | De Paria Peninsula, Venezuela; Mexican coast midway between Brownsville, Tex., and Tampico, Mexico. | Hurricane winds over most of path. | Steamship *Texas City*, 28.42. | Interior of Mexico | Hurricane | Earliest known in Trinidad area and the only one in a record of 50 years to pass south of that island. |
| 3 | July 13–19 | Near St. Kitts | Yucatan Peninsula and Mexico somewhat north of Vera Cruz. | | | do | Minor disturbance. | |
| 4 | July 21–27 | Western Gulf of Mexico.[1] | Texas between Galveston and Corpus Christi. | | | Near Memphis | do | Torrential rains over portions of Texas and Louisiana. |
| 5 | July 25, Aug. 5 | Short distance south of Antigua.[2] | Florida, short distance south of Fort Pierce; later Texas and Mexico slightly south of Brownsville. | 85 NE. Turks Island, 72 NW. Brownsville, Tex. | About 29.00 Brownsville, 29.02 Saba Island. | Interior of Mexico | Hurricane | |

[1] Approximate place of origin.

[2] Well developed when first appeared in field of observation.